

REMARKS

Status of Claims:

Claims 1-21 are presented for examination.

Claim Rejections:

Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida (U.S. Patent No. 6,330,620) in view of Tsurumaki (JP Pub. No. 2001-256000).

With respect to claims 1-21, the rejection is respectfully traversed.

Independent claim 1 recites a disk array device including a component that can be degraded, comprising:

“a trouble point storage unit which stores a point value of the component;

a point update unit which subtracts a predetermined point value from the point value stored in said trouble point storage unit and stores the subtracted point value in said trouble point storage unit, when a processing fault occurs on the component;

a degradation unit which degrades the component when the point value stored in said trouble point storage unit falls below a reference value; and

a trouble point recovery unit which adds an another **predetermined** point value to the point value stored in said trouble point storage unit, when a **predetermined time period** passes since the trouble point recovery unit had added to the point value a last time.” (Emphasis Added).

A disk array device including the above-quoted features has at least the advantages that: (i) a point update unit allows for subtracting a predetermined point value from a point value stored in a trouble point storage unit, and for storing the subtracted point value in the trouble point storage unit, when a processing fault occurs on a component; (ii) a trouble point

recovery unit allows for adding an another predetermined point value to the point value stored in the trouble point storage unit when a predetermined time period passes since the trouble point recovery unit had added to the point value a last time; and (iii) a degradation unit allows for degrading the component when the point value stored in the trouble point storage unit falls below a reference value. (Applicant's Specification; page 2, line 45 – page 3, line 1; page 11, line 7 – page 13, line 8).

Neither Uchida nor Tsurumaki, alone or in combination, disclose or suggest a disk array device including the above-quoted features with a trouble point recovery unit which adds an another predetermined point value to a point value stored in a trouble point storage unit when a predetermined time period passes since the trouble point recovery unit had added to the point value a last time. The Examiner recognizes that, “Uchida fails to explicitly disclose adding a point value after a predetermined time period passes”. (Office Action; page 3). The Examiner then points to paragraphs [0023] through [0026] of Tsurumaki as teaching, “a trouble point recovery unit, which adds an another predetermined point value to the point value stored in said trouble point storage unit, when a predetermined time period passes since the trouble point recovery unit had added to the point value a last time”. (Office Action; page 3) (Emphasis Added).

However, Tsurumaki does not teach a trouble point recovery unit, which adds an another predetermined point value to a point value stored in a trouble point storage unit when a predetermined time period passes since the trouble point recovery unit had added to the point value a last time.

First, it should be understood that the system of Tsurumaki does not add a predetermined point value to a point value stored in a trouble point storage unit. (Tsurumaki; paragraphs [0024], [0026], [0027], [0030], and [0031]). Instead, in the system of Tsurumaki, when an I/O data transfer is performed, a time amount that a magnetic disk spends on the I/O process is recorded as a time delay value, and then that time delay value is added to an accumulation timer value. (Tsurumaki; paragraphs [0024], [0030], and [0031]). The time amount that the disk spends on the I/O process in the system of Tsurumaki is not a predetermined value, but rather is a variable value that must be measured each time an I/O

data transfer is performed in the system of Tsurumaki. (Tsurumaki; paragraphs [0012], [0018], [0024], [0025], [0030], and [0031]).

Indeed, the entire system of Tsurumaki relies on accumulating measured data transfer delays from I/O operations. (Tsurumaki; paragraph [0025]). The time amount that a disk spends on an I/O process in Tsurumaki is clearly variable, because the problem that Tsurumaki is addressing is I/O data transfer delays that occur due to abnormalities. (Tsurumaki; paragraphs [0002], [0003], [0024], and [0030]). Thus, when the system of Tsurumaki adds a time amount which a disk spent on an I/O process to an accumulated value, the system of Tsurumaki is not adding a predetermined value to the accumulated value, but rather is adding a variable measured value to the accumulated value. (Tsurumaki; paragraphs [0024], [0030], and [0031]).

Second, it should be understood that the system of Tsurumaki does not add a point value to a point value stored in a trouble point storage unit when a predetermined time period passes since the trouble point recovery unit had added to the point value a last time. As explained in paragraphs [0024] and [0025] of Tsurumaki, the data control means 5 adds the time amount that a magnetic disk spent on an I/O process to an accumulation timer value whenever a data transfer delay occurs. (Tsurumaki; paragraphs [0024] and [0025]). Thus, the system of Tsurumaki does not add a value after a predetermined time period passes since the last time a value was added, but rather adds a value whenever a data transfer delay occurs, which may be at variable times. (Tsurumaki; paragraphs [0024] and [0025]).

Therefore, independent claim 1 is neither disclosed nor suggested by the Uchida and Tsurumaki references, alone or in combination, and, thus, is believed to be allowable. The Patent Office has not made out a *prima facie* case of obviousness under 35 U.S.C. 103.

Independent claim 2 recites a disk array device with features similar to features of a disk array device of independent claim 1, except that claim 2 recites “a point update unit which adds a predetermined point value from the point value stored in said trouble point storage unit and stores the added point value in said trouble point storage unit, when a processing fault occurs on the component”, and “a trouble point recovery unit which subtracts

an another predetermined point value to the point value stored in said trouble point storage unit, when a predetermined time period passes since the trouble point recovery unit had subtracted to the point value a last time”, and “a degradation unit which degrades the component when the point value stored in said trouble point storage unit exceeds a reference value”. Therefore, independent claim 2 is believed to be allowable for at least the same reasons that independent claim 1 is believed to be allowable.

Independent claims 3, 8, 9, 12, 14, 17, 19, 20, and 21 are believed to be allowable for at least the same reasons indicated above discussing that neither Uchida nor Tsurumaki disclose or suggest a disk array device of independent claim 1.

Independent claims 13 recites a component degradation method with features similar to features of a disk array device of independent claim 2 and, thus, is believed to be allowable for at least the same reasons that independent claim 2 is believed to be allowable.

The dependent claims are deemed allowable for at least the same reasons indicated above with regard to the independent claims from which they depend.

Conclusion:

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-0872. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-0872.

If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 50-0872.

Respectfully submitted,

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